

ETSI EN 301 489-1 V1.8.1 (2008-04)
ETSI EN 301 489-6 V1.3.1 (2008-08)
MEASUREMENT AND TEST REPORT

For

Xingtel Xiamen Group Co., Ltd.

Xingtel Building, Chuangxin Road, Torch Hi-Tech Industrial District,
Xiamen 361006, PR China

Model: CL-3631

Report Type: Original Report	Product Type: DECT Phone(Base)
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* This report contains data that are not covered by the NVLAP accreditation and are marked with an asterisk "★" (Rev.2)

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Xingtel Xiamen Group Co., Ltd.*'s product, model number: *CL-3631* (the "EUT") in this report is a base of DECT Phone, the base measures approximately 21.2 cm (L) x 17.2 cm (W) x 7.0 cm (H), Rated input voltage: DC 7.5 V from adapter.

** All measurement and test data in this report was gathered from production sample serial number: 1109012 (Assigned by BACL, Shenzhen). The EUT was received on 2011-09-07.*

Criterion A

Performance criterion for Continuous Phenomena applied to DECT Phone Transceivers part

The BER of the signal as measured shall not exceed 1×10^{-3} during the test sequence.

Additionally for equipment containing analogue speech circuits the speech output signal level shall be at least 35dB less than the previously recorded reference level. At the conclusion of the test, the EUT shall operate as intended with no loss of user control functions or stored data and the communications link shall have been maintained during and after tests. Where the EUT is capable of transmission, tests shall be performed to ensure that unintentional transmission does not occur. The apparatus shall continue to operate as intended during and after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended.

Performance criterion for Continuous phenomena applied to DECT Phone Receivers part

The primary functions shall be verified during each individual exposure in the test sequence.

Additionally for equipment containing analogue speech circuits the speech output signal level shall be at least 35 dB less than the previously recorded reference level. At the conclusion of the test, the EUT shall operate as intended with no loss of user control functions or stored data, as declared by the manufacturer, and the communications link shall have been maintained. This shall be verified by checking the primary functions.

Performance criterion for charger

The apparatus shall continue to operate as intended during and after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended.

Criterion B**Performance criterion for Transient phenomena applied to DECT Phone Transceivers part**

At the conclusion of each exposure the EUT shall operate with no user noticeable loss of the communications link. At the conclusion of the total test comprising the series of individual exposures the EUT shall operate as intended with no loss of user control functions or stored data, as declared by the manufacturer, and the communications link shall have been maintained. Where the EUT is capable of transmission, tests shall be performed to ensure that unintentional transmission does not occur.

Performance criterion for Transient Continuous phenomena applied to DECT Phone Receivers part

At the conclusion of each exposure the EUT shall operate with no user noticeable loss of the communications link. At the conclusion of the total test comprising the series of individual exposures the EUT shall operate as intended with no loss of user control functions or stored data, as declared by the manufacturer, and the communications link shall have been maintained. This shall be verified by checking the primary functions.

Performance criterion for charger

The apparatus shall continue to operate as intended during and after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended.

Criterion C

Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls.

Immunity test configuration notes:

For all kinds of test the Fixed Part was supplied with 230 V AC.

During the immunity tests with audio break through, the Telephone line was supplied with 60 V DC by a battery and the audio signal was decoupled by a feeding bridge (Signals for MRP (Mouth Reference Point)).

The Audio signals at the Portable part were measured by an acoustical monitoring system with an optical microphone. (Signals for ERP (Ear Reference Point)) The audio signals were measured with the help of an audio analyzer.

During the immunity tests with monitoring the BER (Bit Error Rate) FP (Fixed Part) was connected to a DECT communication Tester CMD 60, for measuring the BER.

During the immunity tests with monitoring the BER (Bit Error Rate) PP (Portable Part) was connected to a DECT communication Tester CMD 60, for measuring the BER.

During the other immunity tests a voice call was realized by using telephone private branch network. The call was monitored by the operator.

The volume setting of the Portable part was set to level 2 of 3, this setting level was given by the applicant.

During the other immunity tests a phone call was realized by using telephone private branch network. The call was monitored by the operator.

Objective

The following test report is prepared on behalf of *Xingtel Xiamen Group Co., Ltd.* in accordance with ETSI EN 301 489-1 V1.8.1 (2008-04) Plus Provisions of ETSI EN 301 489-6 V1.3.1 (2008-08), Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 6: Specific conditions for Digital Enhanced Cordless Telecommunications (DECT) equipment.

The objective of the manufacturer is to determine compliance with ETSI EN 301 489-1 V1.8.1 (2008-04) Plus Provisions of ETSI EN 301 489-6 V1.3.1 (2008-08).

Related Submittal(s)/Grant(s)

No related submittal(s).

Test Methodology

All measurements contained in this report were conducted with ETSI EN 301 489-1 V1.8.1 (2008-04).

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp.(Shenzhen) to collect test data is located on the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China.

Test site at Bay Area Compliance Laboratories Corp. (Shenzhen) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on December 06, 2010. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2009.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 382179. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, Bay Area Compliance Laboratories Corp. (Shenzhen) is an ISO/IEC 17025 accredited laboratory, and is accredited by National Voluntary Laboratory Accredited Program (Lab Code 200707-0).



The current scope of accreditations can be found at <http://ts.nist.gov/Standards/scopes/2007070.htm>

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in a typical fashion (as normally used by a typical user).

Equipment Modifications

No modifications were made to the unit tested.

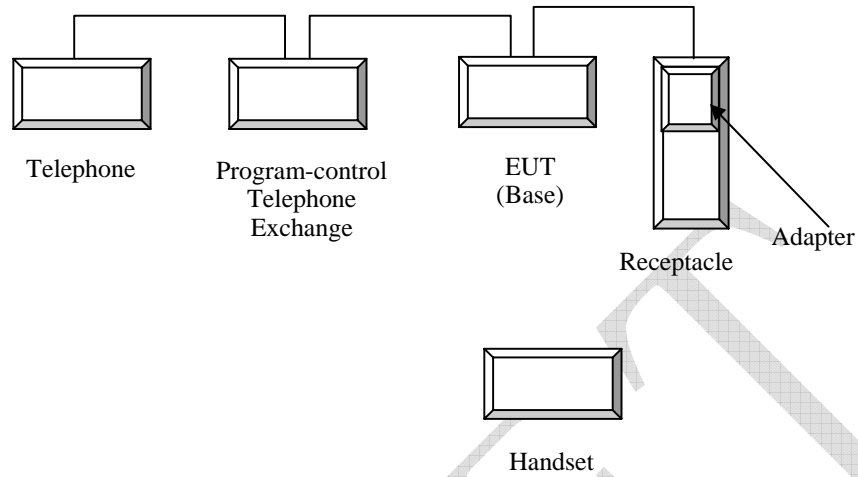
Local Support Equipment List and Details

Manufacturer	Description	Model	Serial Number	FCC ID
Oneke	Program-control Telephone Exchanger	TC-108H	N/A	N/A
TIANNIAO	PHONE	TL2201	N/A	N/A
SAGEMCOM	DECT Phone	CL-3631(Handset)	N/A	N/A
R&S	Digital Radio Communication Test	CMD60	829902/026	N/A

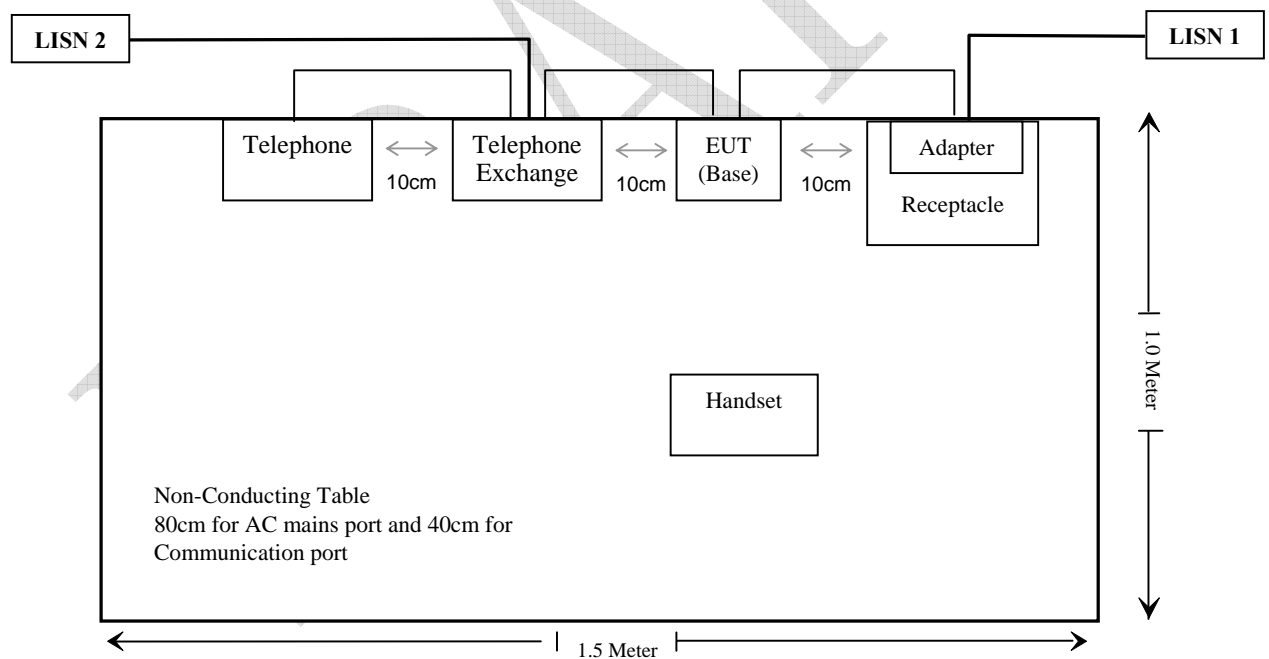
External I/O Cable

Cable Description	Length (m)	From Port	To
Unshielded Detachable DC Power Cable	1.50	EUT (Base)	Adapter
Unshielded Detachable RJ11 Cable	2.00	EUT (Base)	Program-control Telephone Exchanger

Configuration of Test Setup



Block Diagram of Test Setup



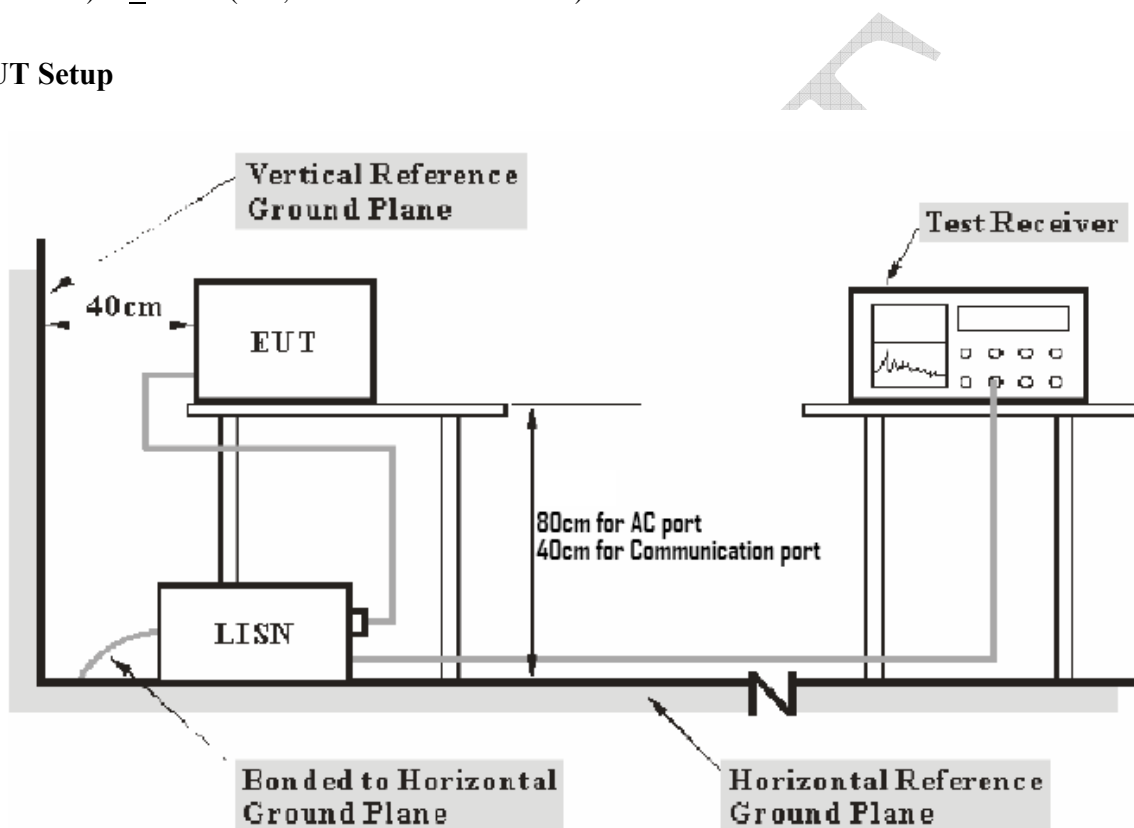
SUMMARY OF TEST RESULTS

ETSI EN 301 489-6 V1.3.1 (2008-08)	Description of Test	Result
§7.1	Reference to clauses EN 301 489-1 §8.4 AC mains power input/output ports	Compliance
	Reference to clauses EN 301 489-1 §8.3 DC power input/output ports	N/A
	Reference to clauses EN 301 489-1 §8.2 Enclosure of ancillary equipment measured on a stand alone basis	Compliance
	Reference to clauses EN 301 489-1 §8.5 Harmonic current emissions (AC mains input port)	Compliance
	Reference to clauses EN 301 489-1 §8.6 Voltage fluctuations and flicker (AC mains input port)	Compliance
	Reference to clauses EN 301 489-1 §8.7 Telecommunication ports	Compliance
§7.2	Reference to clauses EN 301 489-1 §9.2 Radio frequency electromagnetic field (80 MHz to 1 000 MHz and 1 400 MHz to 2 700 MHz)(EN 61000-4-3)	Compliance
	Reference to clauses EN 301 489-1 §9.3 Electrostatic discharge (EN 61000-4-2)	Compliance
	Reference to clauses EN 301 489-1 §9.4 Fast transients, common mode (EN 61000-4-4)	Compliance
	Reference to clauses EN 301 489-1 §9.5 Radio frequency, common mode (EN 61000-4-6)	Compliance
	Reference to clauses EN 301 489-1 §9.6 Transients and surges in the vehicular environment (ISO 7637-2)	N/A
	Reference to clauses EN 301 489-1 §9.8 Surges (EN 61000-4-5)	Compliance
	Reference to clauses EN 301 489-1 §9.7 Voltage dips and interruptions (EN 61000-4-11)	Compliance

Measurement Uncertainty

Based on CISPR 16-4-2, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement at Bay Area Compliance Laboratories Corp. (Shenzhen) is +2.4 dB.(k=2, 95% confidence of level)

EUT Setup



Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per EN 301 489-1 measurement procedures. The specification used was with the EN 301 489-6 limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

The adapter was connected to 230 VAC/50 Hz power source.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

<i>Frequency Range</i>	<i>IFBW</i>
150 kHz – 30 MHz	9 kHz

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCS30	830245	2011-03-03	2012-03-02
Rohde & Schwarz	L.I.S.N.	ESH2-Z5	892107/021	2011-03-08	2012-03-09
SCHWARZBECK	2 WIRE ISN	NTFM 8136	8136164	2011-10-19	2012-10-18
Com-Power	L.I.S.N.	LI-200	12208	N/A	N/A

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Procedure

During the conducted emission test, the adapter was connected to the receptacle and the receptacle was connected to the outlet of the first LISN, and the telephone was connected to the outlet of the second LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

Test Results Summary

According to the recorded data in following table, the EUT complied with the ETSI EN 301 489-6, with the worst margin reading of:

Talking:

3.06 dB at 0.310 MHz in the RJ11 conducted mode

Test Data

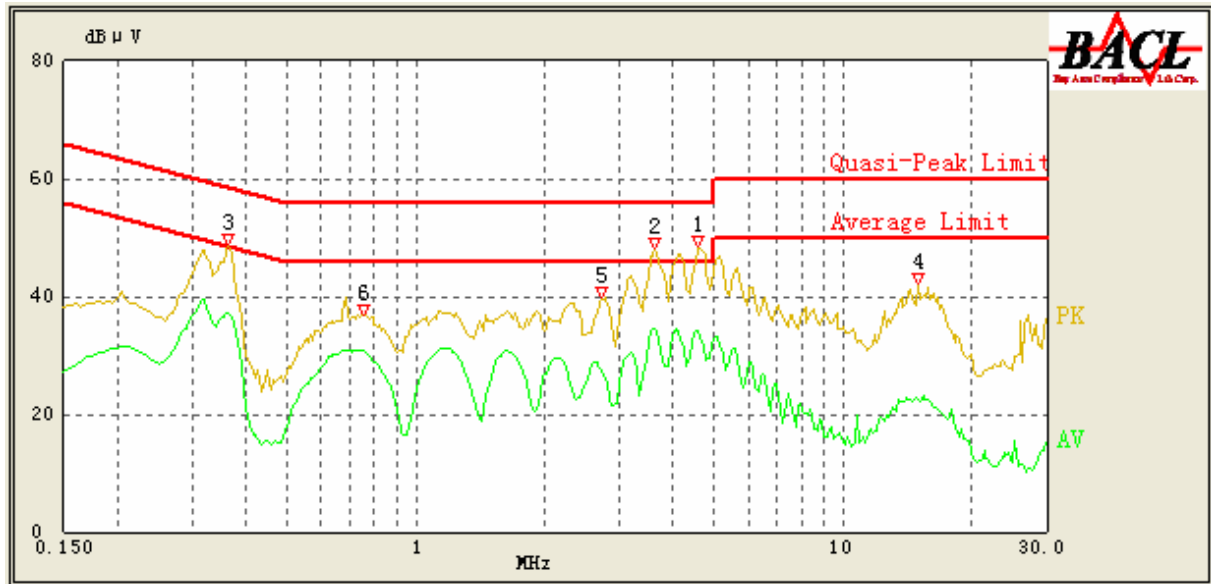
Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	48 %
ATM Pressure:	100.0 kPa

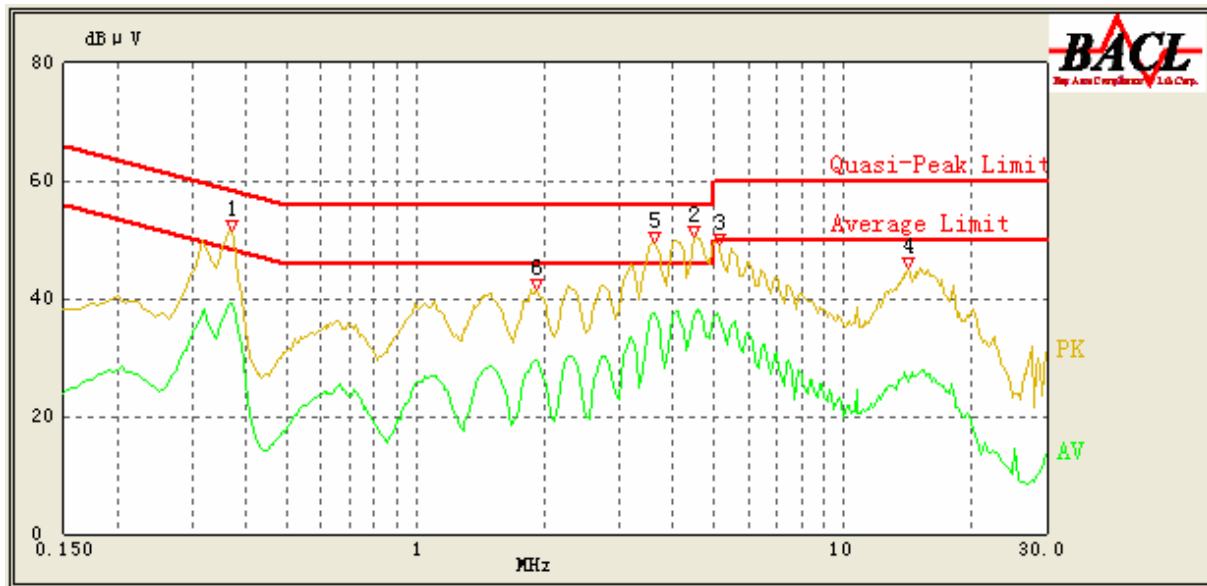
The testing was performed by Allan An on 2011-10-20.

Test Mode: Base Talking with Telephone

AC 230V/50 Hz, Line:

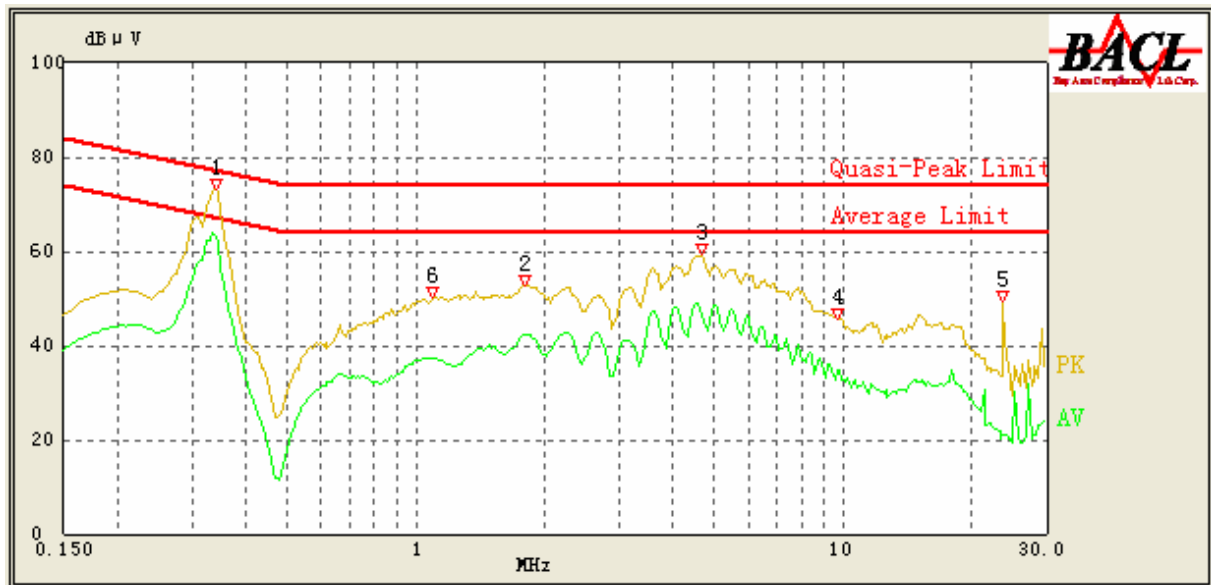


Conducted Emissions			EN 301489-6		
Frequency (MHz)	Cord. Result (dB μ V)	Corrected Factor (dB)	Limit (dB μ V)	Margin (dB)	Remark (PK/QP/Ave)
3.635	34.49	10.10	46.00	11.51	Ave
4.575	34.18	10.10	46.00	11.82	Ave
0.365	37.10	10.10	49.86	12.76	Ave
0.365	44.77	10.10	59.86	15.09	QP
0.760	30.60	10.10	46.00	15.40	Ave
3.615	40.49	10.10	56.00	15.51	QP
4.580	40.39	10.10	56.00	15.61	QP
2.695	27.98	10.10	46.00	18.02	Ave
0.755	33.65	10.10	56.00	22.35	QP
2.710	33.23	10.10	56.00	22.77	QP
14.885	22.69	10.10	50.00	27.31	Ave
15.010	32.27	10.10	60.00	27.73	QP

AC 230V/50 Hz, Neutral:

Conducted Emissions			EN 301489-6		
Frequency (MHz)	Cord. Result (dB μ V)	Corrected Factor (dB)	Limit (dB μ V)	Margin (dB)	Remark (PK/QP/Ave)
4.510	37.85	10.10	46.00	8.15	Ave
3.615	37.56	10.10	46.00	8.44	Ave
3.620	45.54	10.10	56.00	10.46	QP
0.370	39.13	10.10	49.71	10.58	Ave
4.490	45.15	10.10	56.00	10.85	QP
0.370	47.35	10.10	59.71	12.36	QP
5.100	37.38	10.10	50.00	12.62	Ave
5.130	44.44	10.10	60.00	15.56	QP
1.930	29.29	10.10	46.00	16.71	Ave
1.920	37.74	10.10	56.00	18.26	QP
14.165	25.84	10.10	50.00	24.16	Ave
14.195	35.35	10.10	60.00	24.65	QP

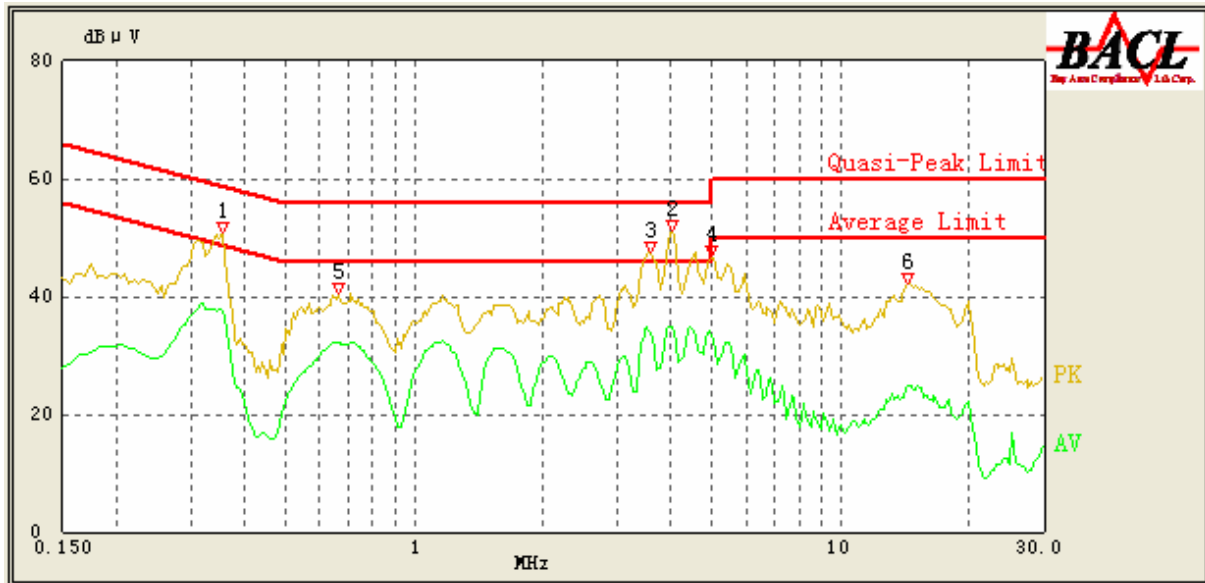
Test Mode: Base Talking with Telephone (RJ11 Port)



Conducted Emissions			EN 301489-6		
Frequency (MHz)	Cord. Result (dBμV)	Corrected Factor (dB)	Limit (dBμV)	Margin (dB)	Remark (PK/QP/Ave)
0.340	63.29	10.10	68.57	5.28	Ave
0.340	70.54	10.10	78.57	8.03	QP
4.635	47.80	10.10	64.00	16.20	Ave
1.800	42.22	10.10	64.00	21.78	Ave
4.665	51.71	10.10	74.00	22.29	QP
1.800	48.78	10.10	74.00	25.22	QP
1.095	37.16	10.10	64.00	26.84	Ave
1.095	45.21	10.10	74.00	28.79	QP
9.680	34.77	10.10	64.00	29.23	Ave
9.655	40.22	10.10	74.00	33.78	QP
23.680	20.87	10.10	64.00	43.13	Ave
23.670	24.52	10.10	74.00	49.48	QP

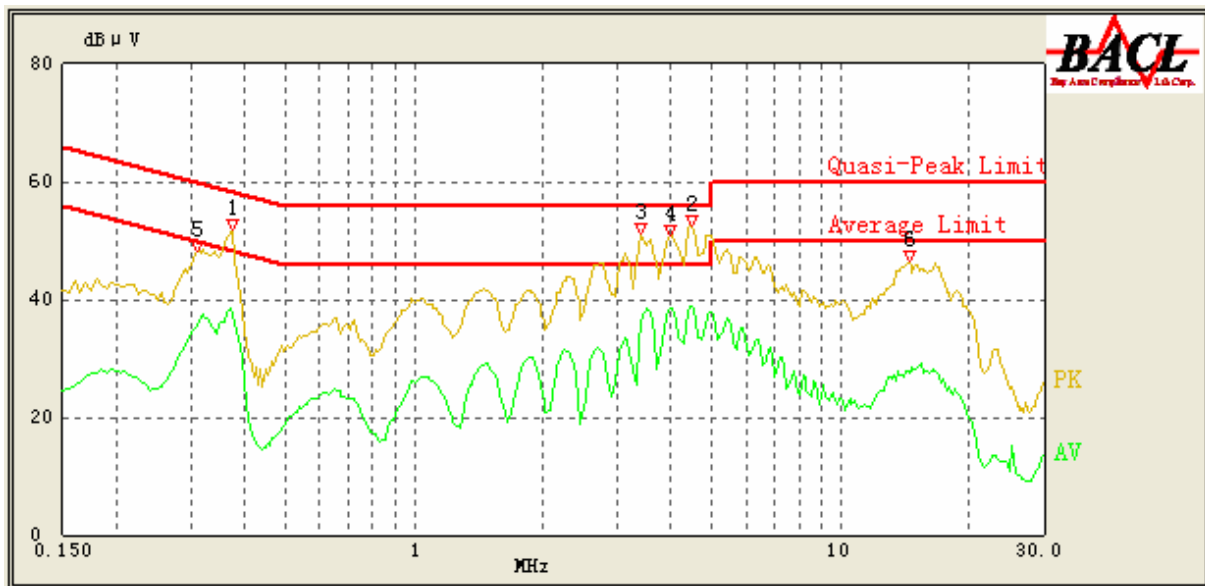
Test Mode: Talking with Handset

AC 230V/50 Hz, Line:



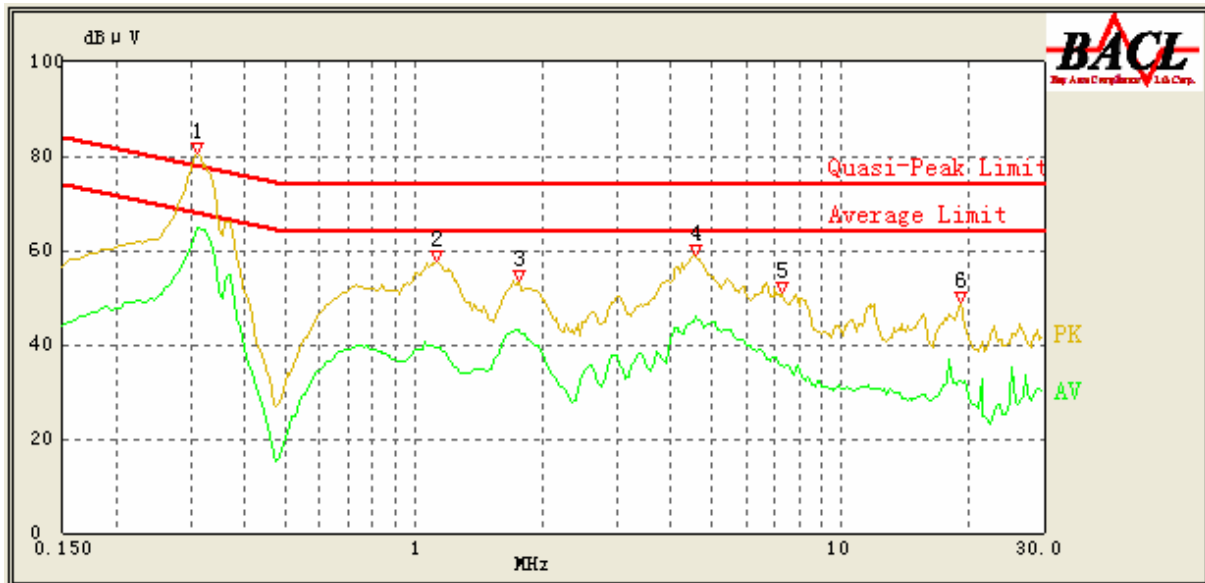
Conducted Emissions			EN 301489-6		
Frequency (MHz)	Cord. Result (dBμV)	Corrected Factor (dB)	Limit (dBμV)	Margin (dB)	Remark (PK/QP/Ave)
4.020	34.74	10.10	46.00	11.26	Ave
3.560	34.32	10.10	46.00	11.68	Ave
5.000	33.45	10.10	46.00	12.55	Ave
0.355	37.41	10.10	50.14	12.73	Ave
0.670	32.02	10.10	46.00	13.98	Ave
3.575	41.52	10.10	56.00	14.48	QP
5.000	41.20	10.10	56.00	14.80	QP
4.035	40.44	10.10	56.00	15.56	QP
0.355	41.40	10.10	60.14	18.74	QP
0.665	34.24	10.10	56.00	21.76	QP
14.395	24.91	10.10	50.00	25.09	Ave
14.410	33.46	10.10	60.00	26.54	QP

AC 230V/50 Hz, Neutral:



Conducted Emissions			EN 301489-6		
Frequency (MHz)	Cord. Result (dBμV)	Corrected Factor (dB)	Limit (dBμV)	Margin (dB)	Remark (PK/QP/Ave)
4.475	39.00	10.10	46.00	7.00	Ave
4.005	38.53	10.10	46.00	7.47	Ave
4.485	46.29	10.10	56.00	9.71	QP
3.995	45.85	10.10	56.00	10.15	QP
3.415	35.71	10.10	46.00	10.29	Ave
0.375	37.65	10.10	49.57	11.92	Ave
0.375	46.81	10.10	59.57	12.76	QP
3.405	41.85	10.10	56.00	14.15	QP
0.310	35.36	10.10	51.43	16.07	Ave
0.310	43.39	10.10	61.43	18.04	QP
14.475	38.44	10.10	60.00	21.56	QP
14.460	27.66	10.10	50.00	22.34	Ave

Test Mode: Talking with Handset (RJ11 Port)



Conducted Emissions			EN 301489-6		
Frequency (MHz)	Cord. Result (dBμV)	Corrected Factor (dB)	Limit (dBμV)	Margin (dB)	Remark (PK/QP/Ave)
0.310	76.37	10.10	79.43	3.06	QP
0.310	64.62	10.10	69.43	4.81	Ave
4.550	46.00	10.10	64.00	18.00	Ave
1.765	43.23	10.10	64.00	20.77	Ave
4.560	50.01	10.10	74.00	23.99	QP
1.135	39.30	10.10	64.00	24.70	Ave
1.770	49.26	10.10	74.00	24.74	QP
7.335	35.38	10.10	64.00	28.62	Ave
1.135	44.49	10.10	74.00	29.51	QP
7.285	42.45	10.10	74.00	31.55	QP
18.920	32.14	10.10	64.00	31.86	Ave
19.035	38.25	10.10	74.00	35.75	QP

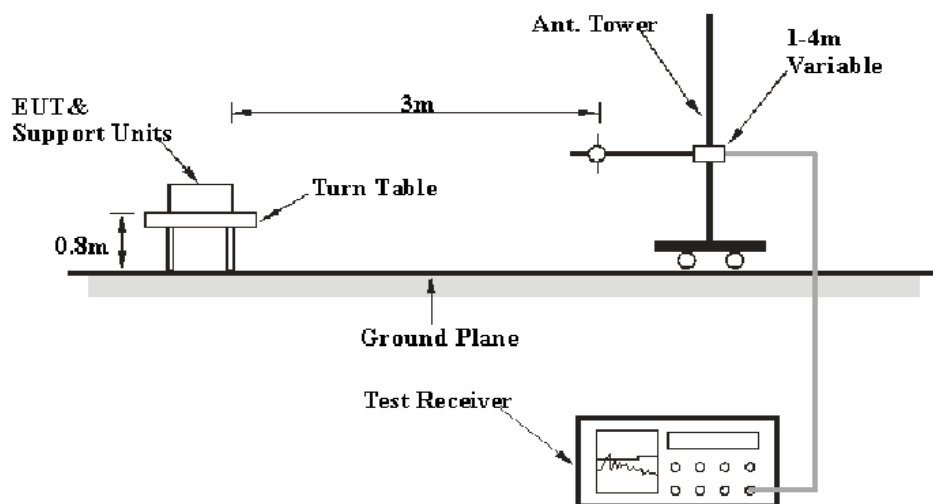
ETSI EN 301 489-6 V1.3.1 (2008-08) §7.1 - RADIATED EMISSIONS

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on CISPR 16-4-2, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement at Bay Area Compliance Laboratories Corp. (Shenzhen) is ± 4.0 dB for below 1GHz and above 1GHz.(k=2, 95% level of confidence)

Test System Setup



The radiated emission tests were performed in the 3 meters, using the setup accordance with the EN 301 489-1. The specification used was the EN 301 489-6.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

The adapter was connected to a 230 VAC/50 Hz power source.

EMI Test Receiver Setup

The system was investigated from 30 MHz to 1 GHz.

During the radiated emission test, the EMI test receiver Setup was set with the following configurations:

<u>Frequency Range</u>	<u>RBW</u>	<u>Video B/W</u>	<u>Detector</u>
30MHz – 1000 MHz	100 kHz	300 kHz	QP

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Amplifier	HP8447D	2944A09795	2011-08-02	2012-08-02
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2010-11-24	2011-11-24
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2011-07-05	2012-07-04

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Procedure

For the radiated emissions test, the adapter and telephone were connected to the AC floor outlet.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

All data was recorded in the Quasi-peak detection mode for below 1 GHz.

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

$$\text{Corrected Amplitude} = \text{Meter Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit for Class B. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Test Results Summary

According to the recorded data in following table, the EUT complied with the ETSI EN 301 489-1, with the worst margin reading of:

7.0 dB at 228.062000 MHz in the Horizontal polarization for talking mode

Test Data

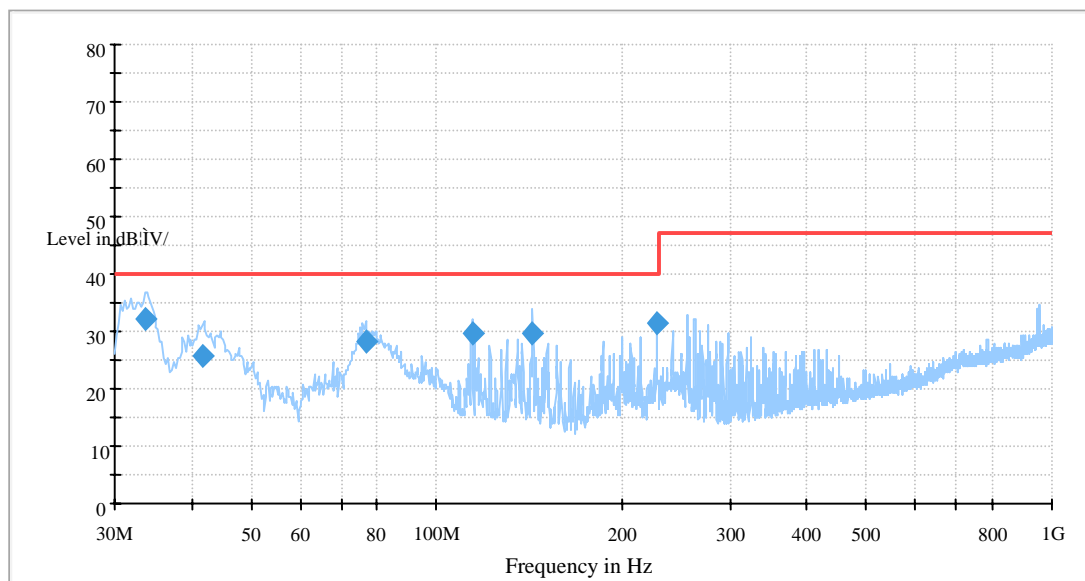
Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	48 %
ATM Pressure:	100.0 kPa

The testing was performed by Allan An on 2011-10-20.

Test Mode: Base Talking with Telephone

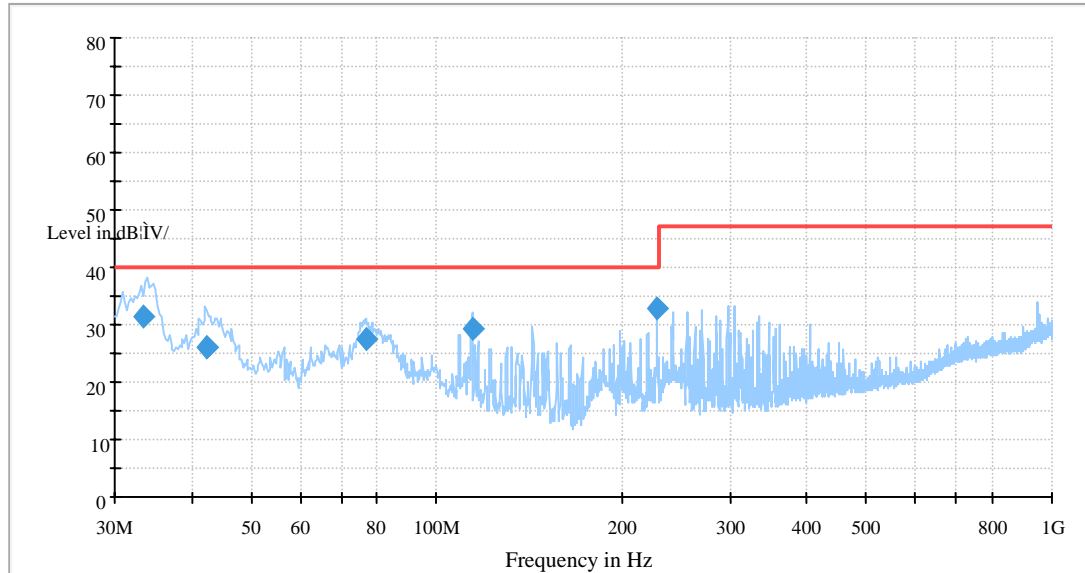
Auto Test (EN 301489)



Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Ant. Polarity (H/V)	Turntable Position (degree)	Correction Factor (dB)	Limit (dBµV/m)	Margin (dB)
33.603000	32.0	102.0	V	108.0	-7.9	40.0	8.0
228.083250	31.4	130.0	H	0.0	-13.9	40.0	8.6
114.242500	29.8	250.0	H	52.0	-12.9	40.0	10.2
143.527500	29.7	208.0	H	222.0	-13.4	40.0	10.3
76.963750	28.2	400.0	H	12.0	-18.2	40.0	11.8
41.822500	25.8	102.0	V	247.0	-13.2	40.0	14.2

Test Mode: Talking with handset

Auto Test (EN 301489)



Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Ant. Polarity (H/V)	Turntable Position (degree)	Correction Factor (dB)	Limit (dBµV/m)	Margin (dB)
228.062000	33.0	132.0	H	188.0	-13.9	40.0	7.0
33.432000	31.5	102.0	V	137.0	-7.8	40.0	8.5
114.316500	29.1	250.0	H	29.0	-12.9	40.0	10.9
76.973500	27.7	400.0	H	14.0	-18.2	40.0	12.3
42.386250	26.1	102.0	V	341.0	-13.6	40.0	13.9
42.412250	26.1	103.0	V	3.0	-13.6	40.0	13.9

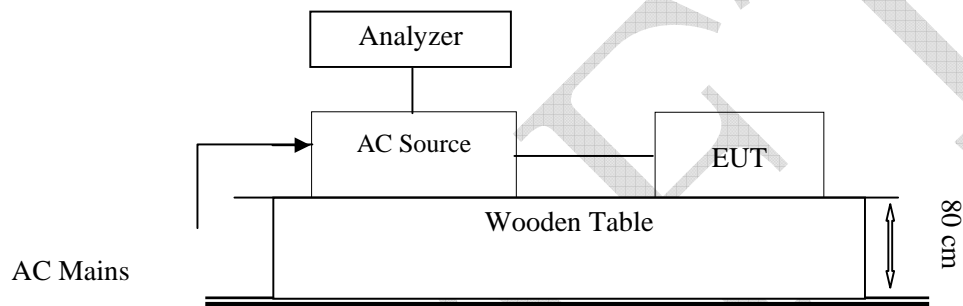
ETSI EN 301 489-6 V1.3.1 (2008-08) §7.1 - HARMONIC CURRENT EMISSIONS

According to EN 61000-3-2:2006 + A1:2009 + A2:2009 section 7: Equipment with a rated power of 75 Watt or less, other than lighting equipment, are not included in this standard.

DRAFT

ETSI EN 301 489-6 V1.3.1 (2008-08) §7.1 - VOLTAGE FLUCTUATION AND FLICKER**Test Equipment**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
EM Test	Harmonic/Flicker Analyzer	DPA500	0501-10	2011-04-28	2012-04-27
EM Test	AC Source	ACS500	1101-02	2011-03-25	2012-03-25

Test System Setup**Test Standard**

EN 61000-3-3: 2008

Test Data and Setup Photo

Date of test:	13:54 23 Sep. 2011
Tester:	Allan An
Standard used:	EN 61000-3-3 Flicker
Short time (Pst):	10 min
Observation time:	10 min (1 Flicker measurement)
Flickermeter:	230V / 50Hz
Customer:	Xingtel Xiamen Group Co., Ltd.
E. U. T.:	DECT Phone
Model:	CL-3631
Test mode:	Base Talking with Telephone

Maximum Flicker results

	EUT values	Limit	Result
Pst	0.028	1.00	PASS
Plt	0.028	0.65	PASS
dc [%]	0.013	3.30	PASS
dmax [%]	0.057	4.00	PASS
dt [s]	0.000	0.50	PASS



Test Setup Photo

Date of test:	14:21 23 Sep. 2011
Tester:	Allan An
Standard used:	EN 61000-3-3 Flicker
Short time (Pst):	10 min
Observation time:	10 min (1 Flicker measurement)
Flickermeter:	230V / 50Hz
Customer:	Xingtel Xiamen Group Co., Ltd.
E. U. T.:	DECT Phone
Model:	CL-3631
Test mode:	Talking with handset

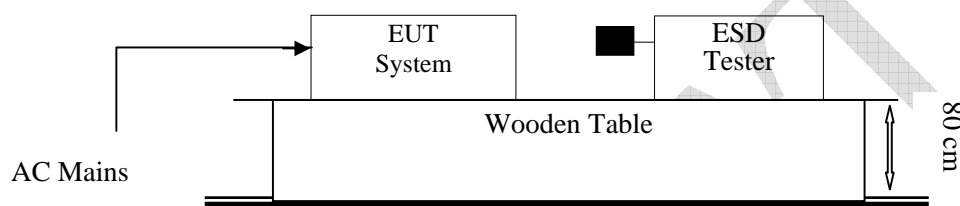
Maximum Flicker results

	EUT values	Limit	Result
Pst	0.028	1.00	PASS
Plt	0.028	0.65	PASS
dc [%]	0.013	3.30	PASS
dmax [%]	0.060	4.00	PASS
dt [s]	0.000	0.50	PASS



ETSI EN 301 489-6 V1.3.1 (2008-08) §7.2 - ELECTROSTATIC DISCHARGE**Test Equipment**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
EM Test	ESD Tester	Dito	302105	2010-10-27	2011-10-26

Test System Setup

Remark: ■ is the tip of the electrode

EN 61000-4-2 specifies that a tabletop EUT shall be placed on a non-conducting table which is 80 centimeters above a ground reference plane and that floor mounted equipment shall be placed on a insulating support approximately 10 centimeters above a ground plane. During the tests, the EUT is positioned over a ground reference plane in conformance with this requirement.

For tabletop equipment, a 1.5 by 1.0-meter metal sheet (HCP) is placed on the table and connected to the ground plane via a metal strap with two 470 k Ohms resistors in series. The EUT and attached cables are isolated from this metal sheet by 0.5-millimeter thick insulating material. A Vertical Coupling Plane (VCP) grounded on the ground plane through the same configuration as in the HCP is used.

Test Standard

ETSI EN 301 489-1 V1.8.1 / EN 61000-4-2:2009

Test Level 3 for Air Discharge at ± 8 kV

Test Level 2 for Contact Discharge at ± 4 kV

Test Level

Level	Test Voltage Contact Discharge (\pm kV)	Test Voltage Air Discharge (\pm kV)
1.	2	2
2.	4	4
3.	6	8
4.	8	15
X.	Special	Special

Performance criterion: B

Test Procedure

Air Discharge:

This test is done on a non-conductive surface. The round discharge tip of the discharge electrode shall be approached as fast as possible to touch the EUT. After each discharge, the discharge electrode shall be removed from the EUT. The generator is then re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed.

Contact Discharge:

All the procedure shall be same as Section 8.3.1 of EN 61000-4-2, except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

Indirect discharge for horizontal coupling plane

At least 20 single discharges shall be applied to the horizontal coupling plane, at points on each side of the EUT. The discharge electrode positions vertically at a distance of 0.1m from the EUT and with the discharge electrode touching the coupling plane.

Indirect discharge for vertical coupling plane

At least 20 single discharges shall be applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m X 0.5m, is placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges shall be applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.

Test Data and Setup Photo

Environmental Conditions

Temperature:	24 ° C
Relative Humidity:	56 %
ATM Pressure:	101.0 kPa

The testing was performed by Allan An on 2011-10-21.

Test Mode: Base Talking with Telephone

Table 1: Electrostatic Discharge Immunity (Air Discharge)

EN 61000-4-2 Test Points Location	Test Levels							
	-2 kV	+2 kV	-4 kV	+4 kV	-8 kV	+8 kV	-15 kV	+15 kV
surface (24 Points)	A	A	A	A	A	A	/	/
Slots (24 Points)	A	A	A	A	A	A	/	/
DC/RJ11 PORT (4 points)	A	A	A	A	A	A	/	/
Display (12 points)	A	A	A	A	A	A	/	/
Button (40 points)	A	A	A	A	A	A	/	/

Table 2: Electrostatic Discharge Immunity (Direct Contact)

EN 61000-4-2 Test Points Location	Test Levels							
	-2 kV	+2 kV	-4 kV	+4 kV	-6 kV	+6 kV	-8 kV	+8 kV
/	/	/	/	/	/	/	/	/

Table 3: Electrostatic Discharge Immunity (Indirect Contact HCP)

EN 61000-4-2 Test Points Location	Test Levels							
	-2 kV	+2 kV	-4 kV	+4 kV	-6 kV	+6 kV	-8 kV	+8 kV
Front Side	A	A	A	A	/	/	/	/
Back Side	A	A	A	A	/	/	/	/
Left Side	A	A	A	A	/	/	/	/
Right Side	A	A	A	A	/	/	/	/

Table 4: Electrostatic Discharge Immunity (Indirect Contact VCP)

EN 61000-4-2 Test Points Location	Test Levels							
	-2 kV	+2 kV	-4 kV	+4 kV	-6 kV	+6 kV	-8 kV	+8 kV
Front Side	A	A	A	A	/	/	/	/
Back Side	A	A	A	A	/	/	/	/
Left Side	A	A	A	A	/	/	/	/
Right Side	A	A	A	A	/	/	/	/

Air Discharge



Indirect Contact



Test Setup photos

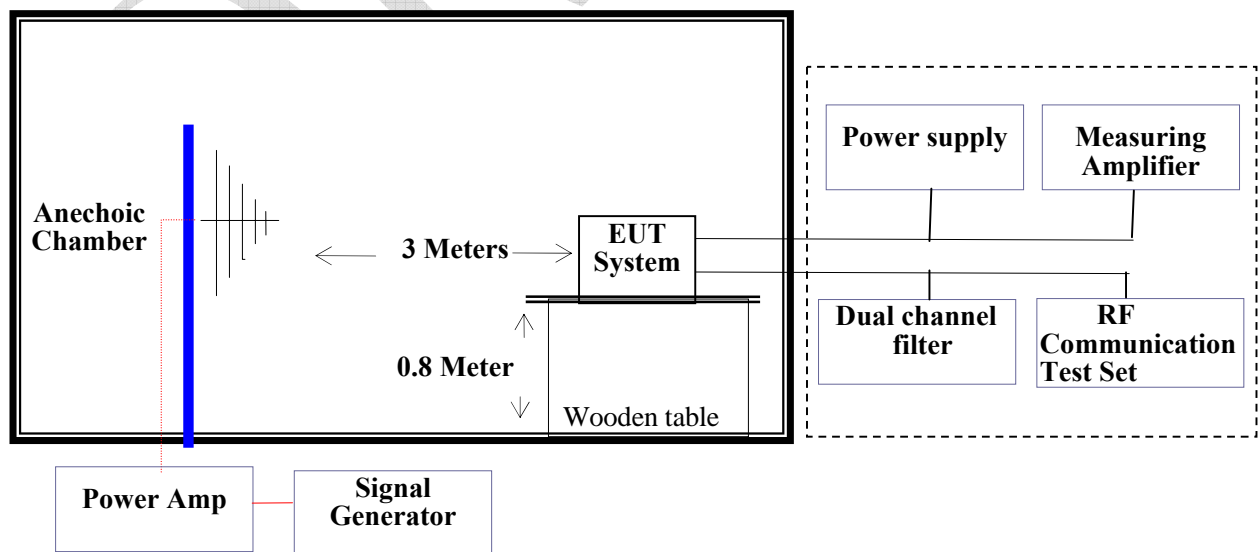
ETSI EN 301 489-6 V1.3.1 (2008-08) §7.2 - RF ELECTROMAGNETIC FIELD (80 to 1000 MHz, 1400 to 2700 MHz)

Test Equipment

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Amplifier Research	Amplifier Input/Output	200W1000/M2	15893	2011-01-14	2012-01-14
Krohn-hite	Dual channel filter	3940	003096	2011-03-19	2012-03-18
LISTEN, Inc.	Microphone Power Supply	N/A	1199-PS165	2011-03-19	2012-03-18
HP	Signal Generator	8648C	3426A01345	2011-01-29	2012-01-29
R/S	Digital Radio Communication Test	CMD60	829902/026	2010-10-28	2011-10-27
Amplifier Research	Biconilog Antenna	AT1080	301902	N/A	N/A
HP	Synthesized Sweeper	8341B	2624A00116	2010-11-07	2011-11-06
Sunol Sciences	Horn Antenna	DRH-118	A052604	2011-09-25	2012-09-25
Brüel & Kjær	Measuring Amplifier	2610	SA0252	2011-05-30	2012-05-30
Brüel & Kjær	Artificial Head	4602B	2174439	2011-09-18	2012-09-18
Brüel & Kjær	Microphone Standard	2669	2159984	2011-09-18	2012-09-18
Brüel & Kjær	Ear Simulator	4185	2190351	2011-09-18	2012-09-18
LISTEN	Power Supply	Sound Connect	1199PS165	2011-09-18	2012-09-18
BK Precision	Sound Level meter	735	7350087309110025	2011-06-09	2012-06-08

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test System Setup



Test Standard

ETSI EN 301 489-1 V1.8.1 / EN 61000-4-3: 2006

Test Level 2 at 3V / m

Test Levels and Performance Criterion

Test Level

Level	Field Strength (V/m)
1.	1
2.	3
3.	10
X.	Special

Performance Criterion: A* (*Note: "A" stand for, the speech output signal level shall be at least 35 dB less than the reference level recorded before the start of the test. This shall be verified by the procedure in EN 301 489-6 V1.3.1 clause 5.3.2.)

Note: During the test, the Bit Error Ratio is less than 1×10^{-3} .

Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above the ground. The EUT is set 3 meters away from the transmitting antenna which is mounted on an antenna tower. Both horizontal and vertical polarizations of the antenna are set on test. Each of the four sides of EUT must be faced this transmitting antenna and measured individually.

In order to judge the EUT performance, an artificial ear and sound level meter are used to monitor the sound pressure level.

All the scanning conditions are as follows:

Condition of Test	Remarks
1. Field Strength	3 V/m (Test Level 2)
2. Radiated Signal	Modulated
3. Scanning Frequency	80 - 1000 MHz and 1400-2700MHz
4. Sweeping time of radiated	0.0015 decade/s
5. Dwell Time	1 Sec.

Test Data and Setup Photo**Environmental Conditions**

Temperature:	24 ° C
Relative Humidity:	50 %
ATM Pressure:	101.0 kPa

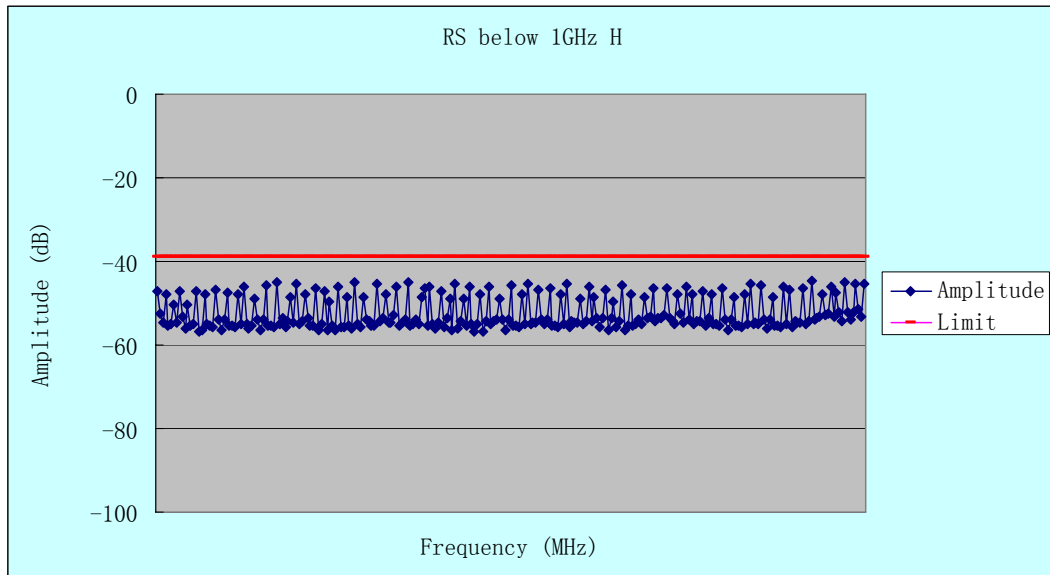
The testing was performed by Allan An on 2011-10-21.

Test Mode: Base Talking with Telephone

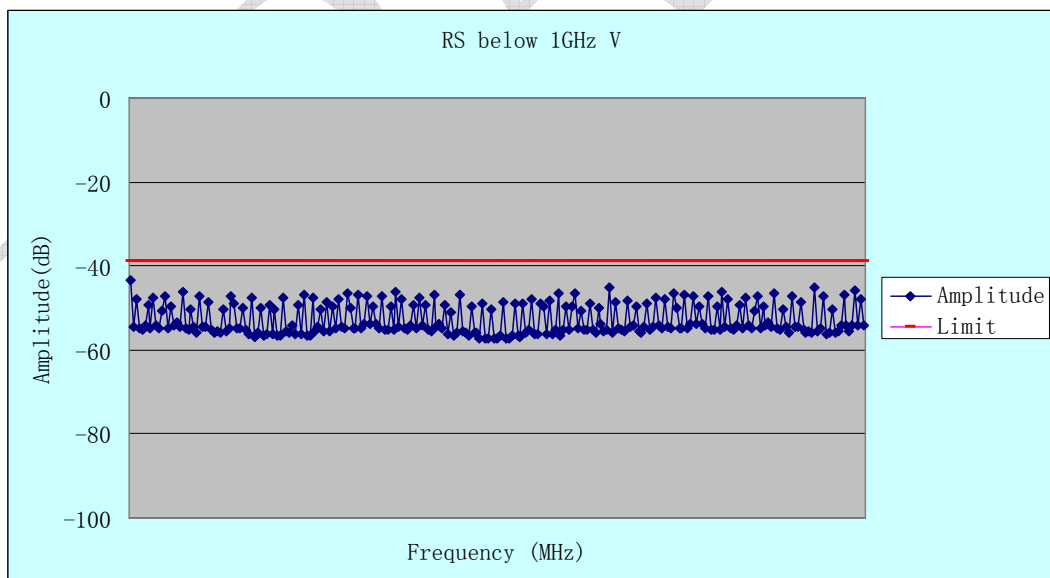
Frequency Range (MHz)	Front Side (3V/m)		Rear Side (3 V/m)		Left Side (3 V/m)		Right Side (3 V/m)	
	VERT	HORI	VERT	HORI	VERT	HORI	VERT	HORI
80-1000	A	A	A	A	A	A	A	A
1400-2700	A	A	A	A	A	A	A	A

The reference level is -4 dB, be equivalent to 0 dBPa at 1 kHz, applied to the ear reference point in the receive path. the plots for worst case.

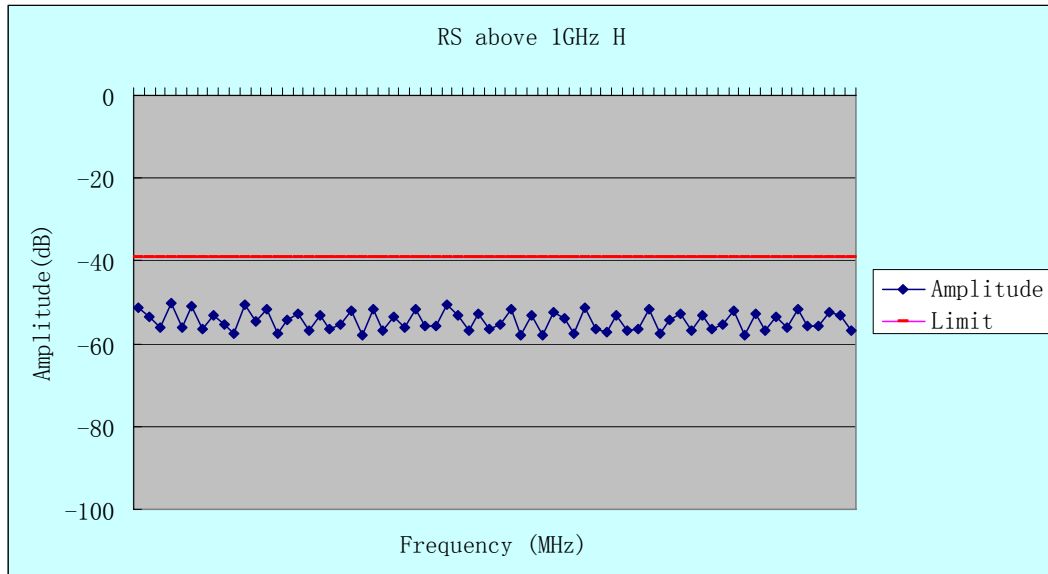
RS-Horizontal (80 MHz-1000 MHz)



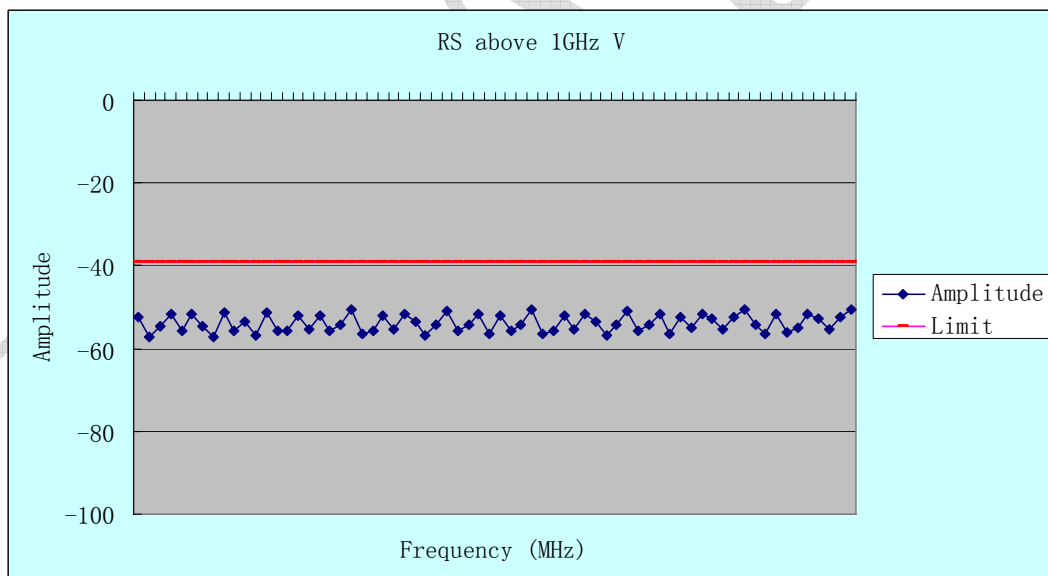
RS-Vertical (80 MHz-1000 MHz)



RS-Horizontal (1400 MHz-2700 MHz)

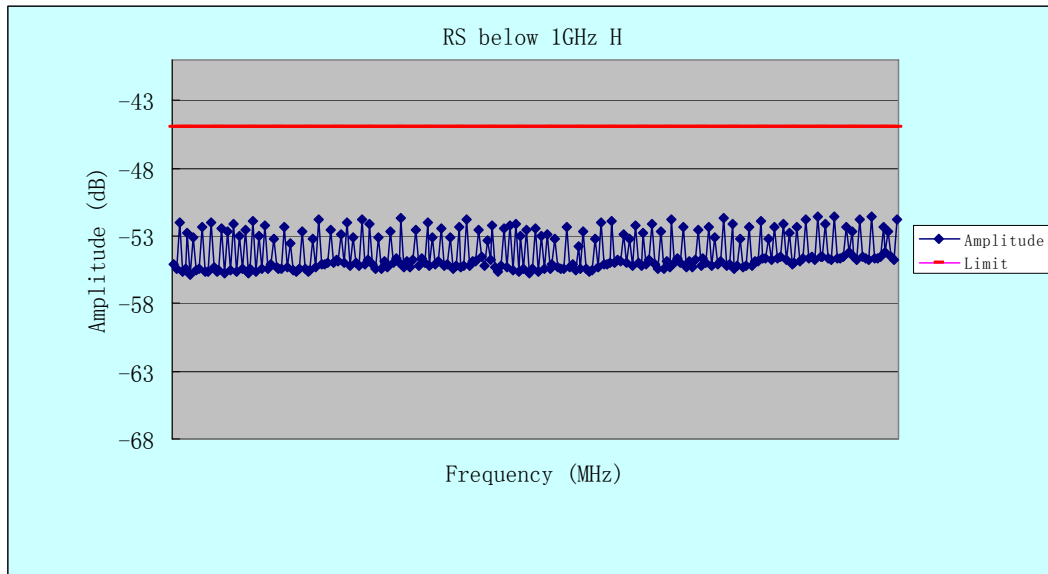


RS-Vertical (1400 MHz-2700 MHz)

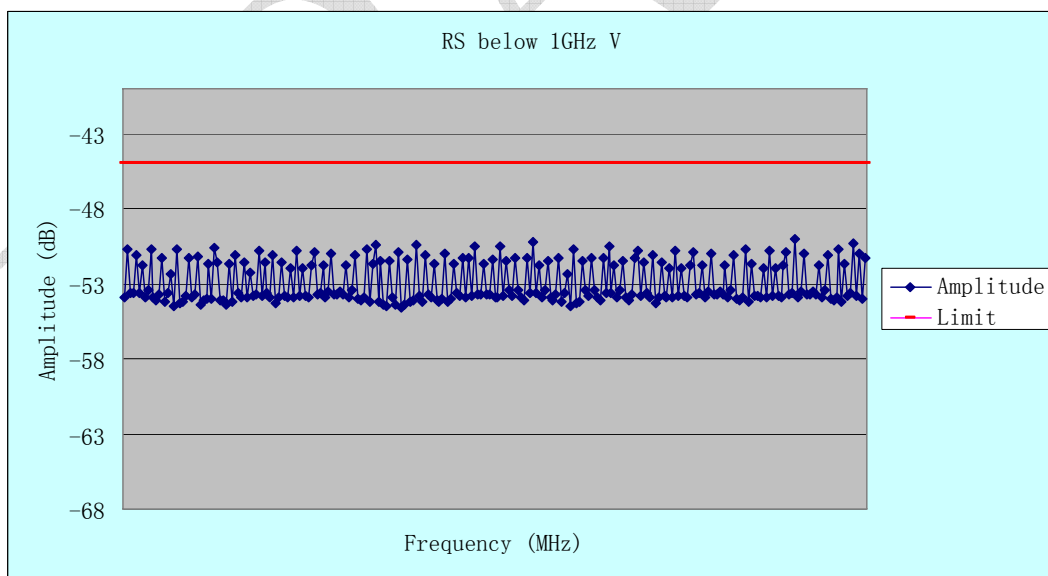


The reference level is -10dB, be equivalent to -5 dBPa at 1 kHz applied to the mouth reference point .The plots for worst case.

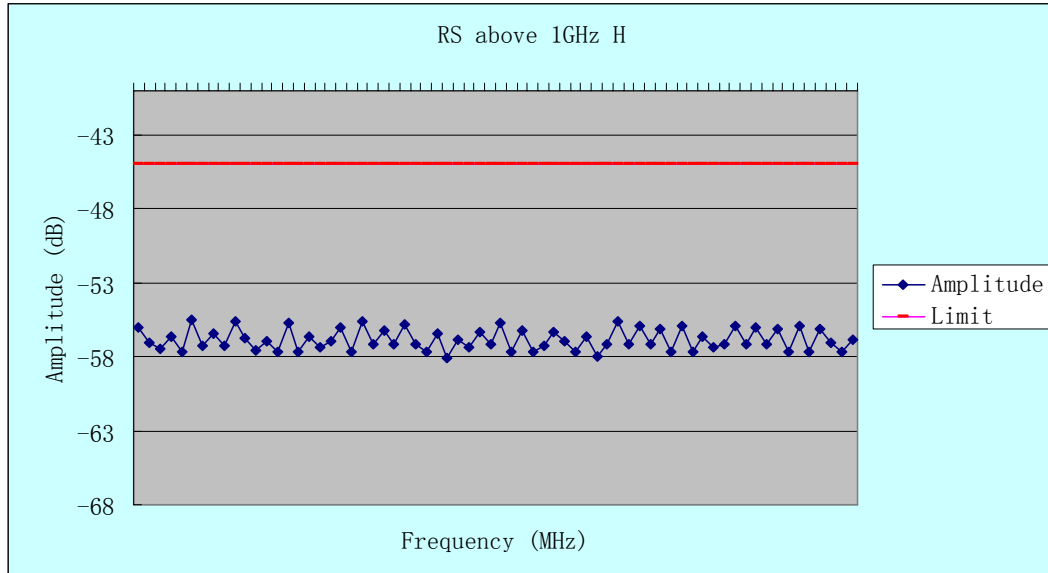
RS-Horizontal (80 MHz-1000 MHz)



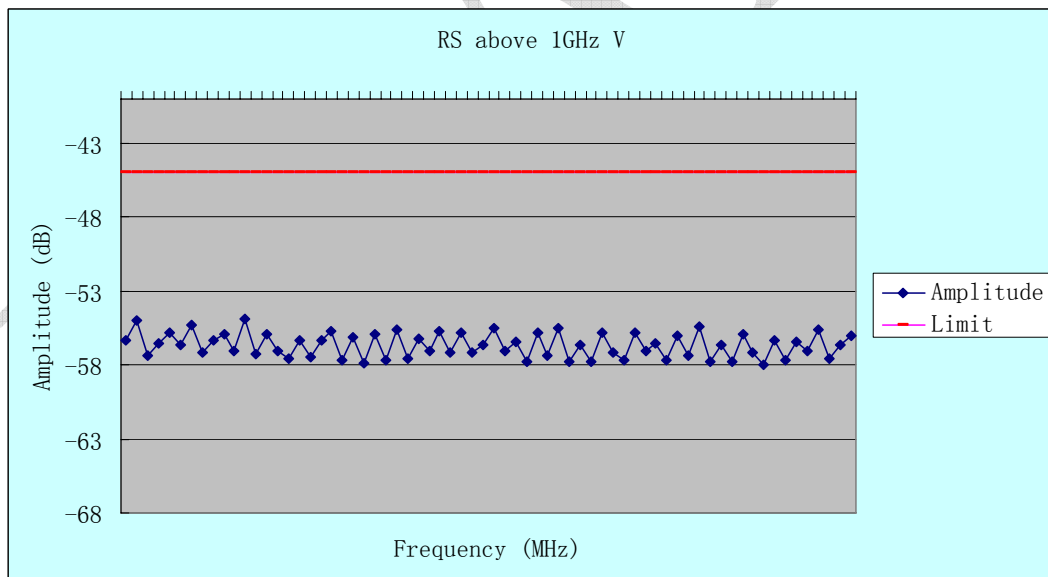
RS-Vertical (80 MHz-1000 MHz)



RS-Horizontal (1400 MHz-2700 MHz)



RS-Vertical (1400 MHz-2700 MHz)



80 MHz - 1000 MHz



1400 MHz – 2700 MHz



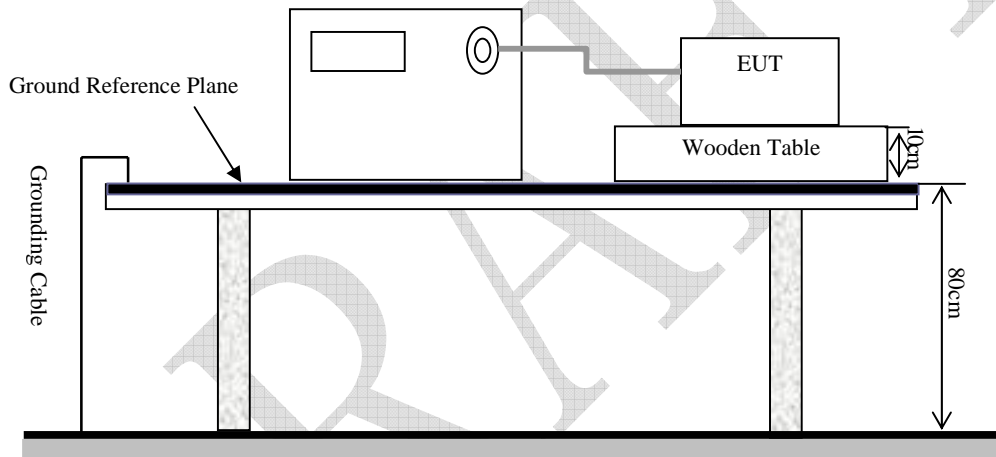
Test Setup photos

ETSI EN 301 489-6 V1.3.1 (2008-08) §7.2 - FAST TRANSIENT IMMUNITY COMMON MODE

Test Equipment

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
EM Test	Ultra Compact Generator	UCS500-N5	V0939105172	2011-07-04	2012-07-04
EM Test	Auto-transformer	MV2616	V0939105173	2011-07-04	2012-07-04
Sunol Sciences	Horn Antenna	DRH-118	A052604	2011-09-25	2012-09-25
R/S	Digital Radio Communication Test	CMD60	829902/026	2010-10-28	2011-10-27

Test System Setup



Test Standard

ETSI EN 301 489-1 V1.8.1/EN 61000-4-4: 2004

Test level 2 at 1 kV for AC main port

Test level 1 at 0.5 kV for signal port

Test Level

Open Circuit Output Test Voltage $\pm 10\%$		
Level	On Power Supply Lines	On I/O (Input/Output) Signal data and control lines
1	0.5 kV	0.25 kV
2	1 kV	0.5 kV
3	2 kV	1 kV
4	4 kV	2 kV
X	Special	Special

Performance Criterion: B

Test Procedure

The EUT was arranged for Power Line Coupling and for I/O Line Coupling through a capacitive clamp, where applicable. (Note: The I/O coupling test using a capacitive clamp is performed on the I/O interface cables that are longer in length than 3 meters.) A metal ground plane 2.4 meter by 2.0 meter was placed between the floor and the table and is connected to the earth by a 2.0 meter ground rod. The ground rod is connected to the test facility's electrical earth.

Test Data and Setup Photo

Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	48 %
ATM Pressure:	100.0 kPa

The testing was performed by Allan An on 2011-10-19.

Test Mode: Talking

EN 61000-4-4 Test Points		Test Levels (kV)							
		+0.5	-0.5	+1.0	-1.0	+2.0	-2.0	+4.0	-4.0
AC mains Power input ports	L1	A	A	A	A	/	/	/	/
	L2	A	A	A	A	/	/	/	/
	Earth	/	/	/	/	/	/	/	/
	L1+L2	A	A	A	A	/	/	/	/
	L1 + Earth	/	/	/	/	/	/	/	/
	L2 + Earth	/	/	/	/	/	/	/	/
	L1+L2+Earth	/	/	/	/	/	/	/	/
Signal Port	RJ11 Port	A	A	/	/	/	/	/	/

Base Talking with Telephone: AC main port



Base Talking with Telephone: RJ11 port



Talking with handset: AC main port



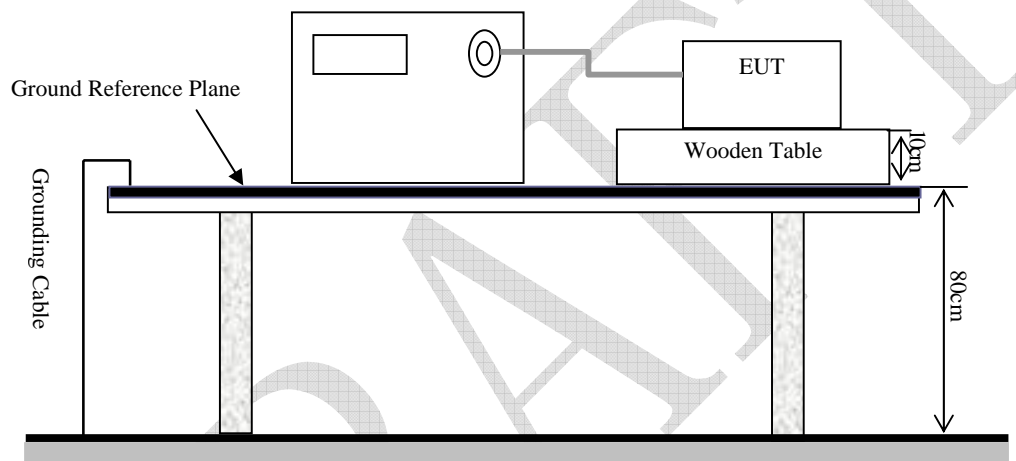
Talking with handset: RJ11 port



Test setup photos

ETSI EN 301 489-6 V1.3.1 (2008-08) §7.2 - SURGES, COMMON AND DIFFERENTIAL MODE**Test Equipment**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
EM Test	Ultra Compact Generator	UCS500-N5	V0939105172	2011-07-04	2012-07-04
EM Test	Auto-transformer	MV2616	V0939105173	2011-07-04	2012-07-04

Test System Setup**Test Standard**

ETSI EN 301 489-1 V1.8.1 / EN 61000-4-5: 2006

AC Mains: L-N: Test level 2 at 1 kV

RJ11 Port: Line-Ground: Test level 2 at 1 kV

Test Level

Level	Open Circuit Output Test Voltage $\pm 10\%$
1	0.5 kV
2	1 kV
3	2 kV
4	4 kV
X	Special

Performance Criterion: B

Test Procedure

- 1) For AC mains port, line to to line coupling mode,provide a 1.0kV 1.2/50 us voltage surge (at open-circuit condition), for signal port, line to to ground coupling mode,provide a 1.0kV 1.2/50 us voltage surge (at open-circuit condition);
- 2) At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate are conducted during test.
- 3) Different phase angles are done individually.
- 4) Record the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

Test Data and Setup Photo

Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	56 %
ATM Pressure:	100.0 kPa

The testing was performed by Allan An on 2011-10-20.

Test Mode: Talking

Table 1: AC mains power input port

Level	Voltage	Poll	Path	Pass	Fail
1	0.5 kV	±	L-N	A	/
2	1 kV	±	L-N	A	/
3	2 kV	±	L-N, L-PE, N-PE	/	/
4	4 kV	±	L-N, L-PE, N-PE	/	/

Table 2: Unshielded I/O Circuits and Lines (RJ11)

Level	Voltage	Poll	Path	Pass	Fail
1	0.5 kV	±	Line-Ground	A	/
2	1 kV	±	Line-Ground	A	/
3	2 kV	±	Line-Line, Line-Ground	/	/
4	4 kV	±	Line-Line, Line-Ground	/	/

Base Talking with Telephone: AC main port



Base Talking with Telephone: RJ11 port



Talking with handset: AC main port



Talking with handset: RJ11 Port



Test Setup Photos

ETSI EN 301 489-6 V1.3.1 (2008-08) §7.2 - RF COMMON MODE, 0.15 MHz to 80 MHz)

Test Equipment

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
EM Test	CDN	M3	1201-05	2011-04-28	2012-04-27
EM Test	C/S Tester	CWS500	303277	2011-10-16	2012-10-16
EM Test	Attenuator	6dB	303282	2010-11-15	2011-11-15
EM Test	Attenuator	6dB	303283	N/A	N/A
FCC	Bulk Current Injection Probe	F-120-9A	303284	2011-03-25	2012-03-25
Brüel & Kjær	Ear Simulator	4185	2190351	2011-05-30	2012-05-30
Brüel & Kjær	Telephone Test Head	4602B	2174439	2011-05-30	2012-05-30
LISTEN, Inc.	Microphone Power Supply	N/A	1199-PS165	2011-05-30	2012-05-30
HP	Synthesized Sweeper	8341B	2624A00116	2010-11-07	2011-11-06
Amplifier Research	CDN	CDN T200	303287	2011-04-08	2012-04-08
R/S	Digital Radio Communication Test	CMD60	829902/026	2010-10-28	2011-10-27
BK Precision	Sound Level meter	735	7350087309110025	2011-06-09	2012-06-08

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attested that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Setup



Test Standard

ETSI EN 301 489-1 V1.8.1/EN 61000-4-6: 2009
Test level 2 at 3 V (e.m.f.), 0.15 MHz ~ 80 MHz,

Test Level

Level	Voltage Level (e.m.f.) (V)
1	1
2	3
3	10
X	Special

Performance Criterion: A* (*Note: "A" stand for, the speech output signal level shall be at least 35 dB less than the reference level recorded before the start of the test. This shall be verified by the procedure in EN 301 489-6 V1.3.1 clause 5.3.2.)

Test Procedure

- 1) Let the EUT work in test mode and test it.
- 2) The EUT are placed on an insulating support 0.1 m high above a ground reference plane. CDN (coupling and decoupling device) is placed on the ground plane about 0.3 m from EUT. Cables between CDN and EUT are as short as possible, and their height above the ground reference plane shall be between 30 and 50 mm (where possible).
- 3) The disturbance signal described below is injected to EUT through CDN.
- 4) The EUT operates within its operational mode(s) under intended climatic conditions after power on.
- 5) The frequency range is swept from 150 kHz to 80 MHz using 3V signal level, and with the disturbance signal 80% amplitude modulated with a 1 kHz sine wave.
- 6) The rate of sweep shall not exceed 1.5×10^{-3} decades/s. Where the frequency is swept incrementally, the step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value.
- 7) Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion.

Test Data and Setup Photo

Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	56 %
ATM Pressure:	100.0 kPa

The testing was performed by Allan An on 2011-10-25.

Test mode: Talking

Table 1: AC mains input port

Level	Voltage Level (e.m.f.) (U ₀)	Pass	Fail
1	1	/	/
2	3	A	/
3	10	/	/
X	Special	/	/

Table 2: Signal port: RJ11

Level	Voltage Level (e.m.f.) (U ₀)	Pass	Fail
1	1	/	/
2	3	A	/
3	10	/	/
X	Special	/	/

Note: During the test, the Bit Error Ratio is less than 1×10^{-3} .

BER less or equal than 1×10^{-3} during the test

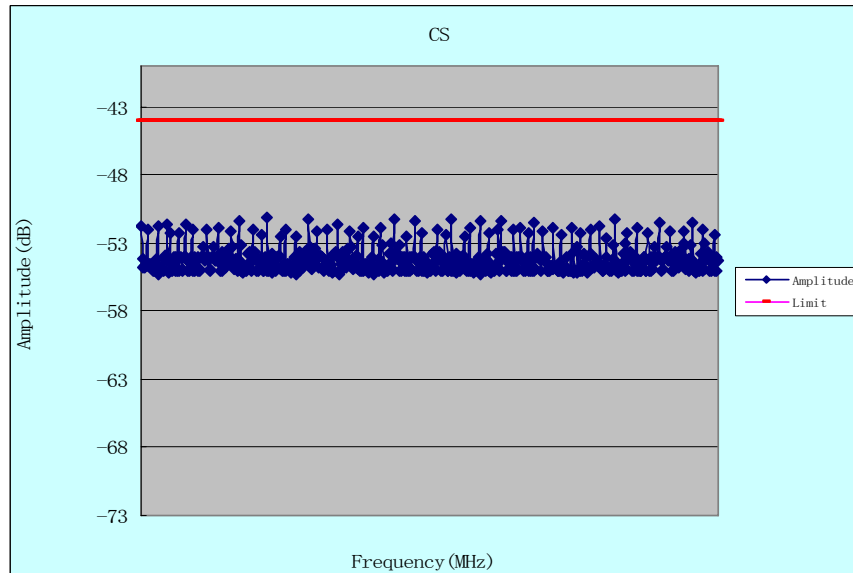
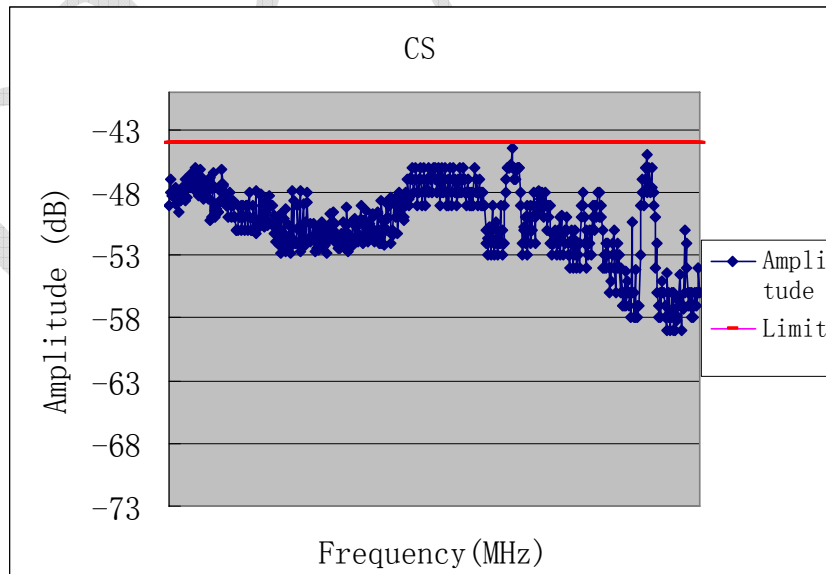
If the equipment contains analogue speech circuits the speech output signal level shall be at least 35 dB less than the reference level recorded before the start of the test. (However, in case of equipment containing analogue speech circuits, instead of BER the assessment of the speech output signal level is used.)

No loss of user control functions or stored data and maintained communication link during and after the tests

No unintentional transmission

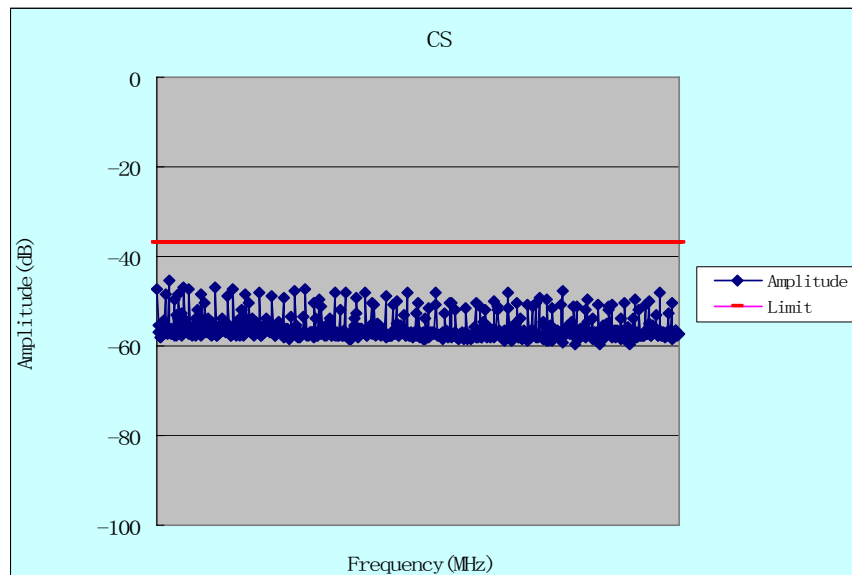
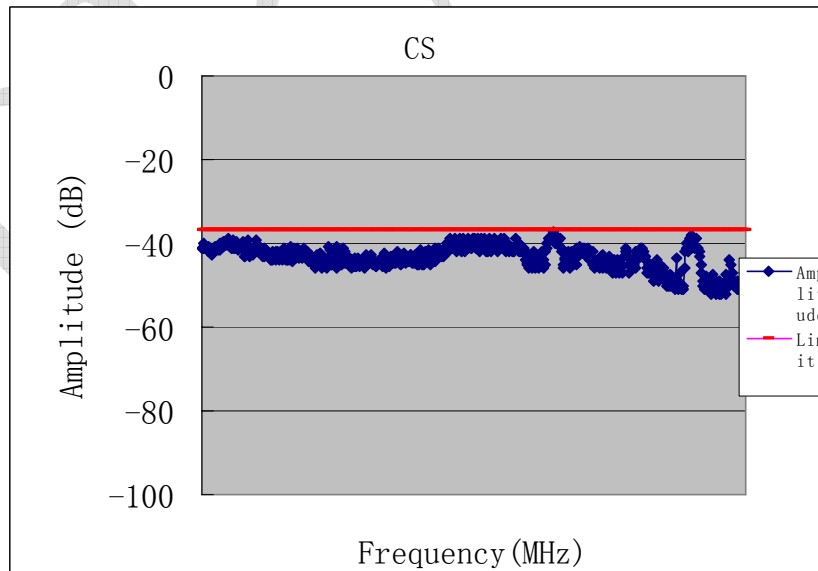
Uplink:

The reference level is -9 dB be equivalent to (-5 dBPa at 1 kHz applied to the mouth reference point).
The plots for worst case as follows:

0.15 MHz-80 MHz (AC Mains)**0.15 MHz-80 MHz (RJ11 Port)**

Downlink:

The reference level is -2 dB, be equivalent to (0 dBPa at 1 kHz, applied to the ear reference point in the receive path). The plots for worst case as follows:

0.15 MHz-80 MHz(AC Mains)**0.15 MHz-80 MHz(RJ11 Port)**

Talking with handset:

AC Mains



RJ11 Port



Test Setup photos

Base Talking with Telephone:

AC Mains



RJ11 Port



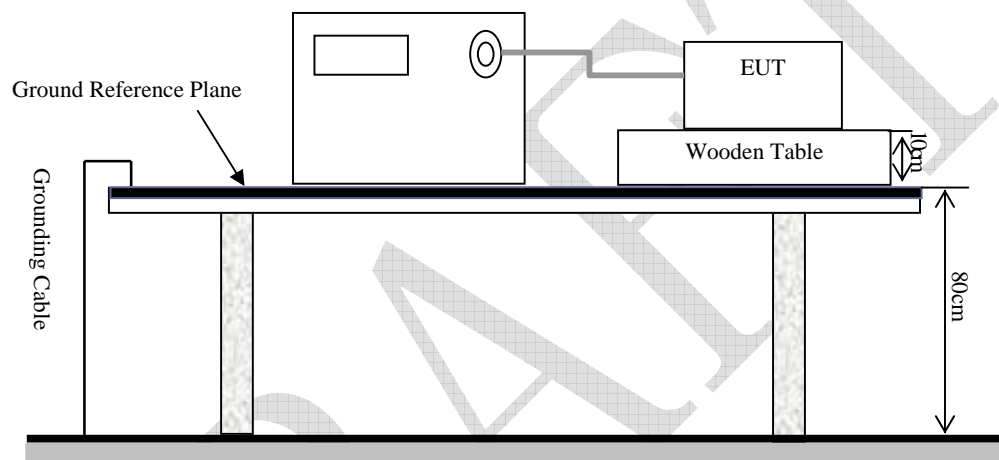
Test Setup photos

ETSI EN 301 489-6 V1.3.1 (2008-08) §7.2 - VOLTAGE DIPS AND INTERRUPTIONS

Test Equipment

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
EM Test	Ultra Compact Generator	UCS500-N5	V0939105172	2011-07-04	2012-07-04
EM Test	Auto-transformer	MV2616	V0939105173	2011-07-04	2012-07-04

Test System Setup



Test Standard

ETSI EN 301 489-1 V1.8.1/EN 61000-4-11: 2004
Test levels and Performance Criterion

Test Level

Test Level	Voltage dip and short interruptions %UT	Duration (in period)	Performance criterion:
1	0	0.5	B
2	0	1	B
3	70	25	C
4	0	250	C

Test Procedure

- 1) The interruption is introduced at selected phase angles with specified duration.
- 2) Record any degradation of performance.

Test Data and Setup Photo**Environmental Conditions**

Temperature:	25 ° C
Relative Humidity:	56 %
ATM Pressure:	100.0 kPa

The testing was performed by Allan An on 2011-09-22.

Test Mode: Talking

Level	Voltage dip and short interruptions (%)	Td (Periods)	Phase Angle	N	Pass	Fail
1	0	0.5	0/90/180/270	3	A	/
2	0	1	0/90/180/270	3	A	/
3	70	25	0/90/180/270	3	B	/
4	0	250	0/90/180/270	3	B	/

Base Talking with Telephone:



Talking with handset:



Test Setup photo

EXHIBIT A - EUT PHOTOGRAPHS

EUT – Front View 1



EUT – Front View 2



EUT – Rear View



EUT – Top View



EUT – Base Cover off View



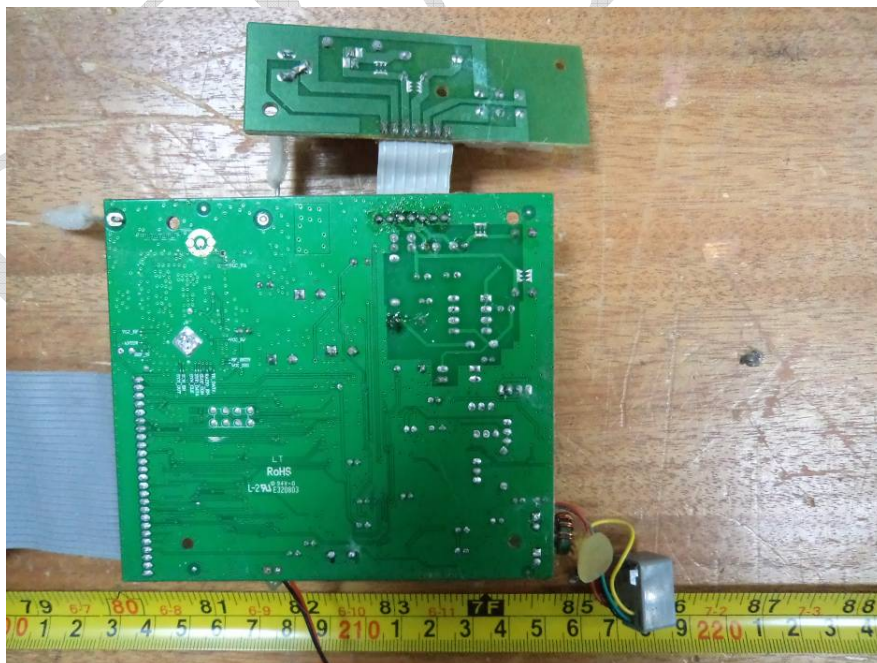
EUT – Handset Cover off View



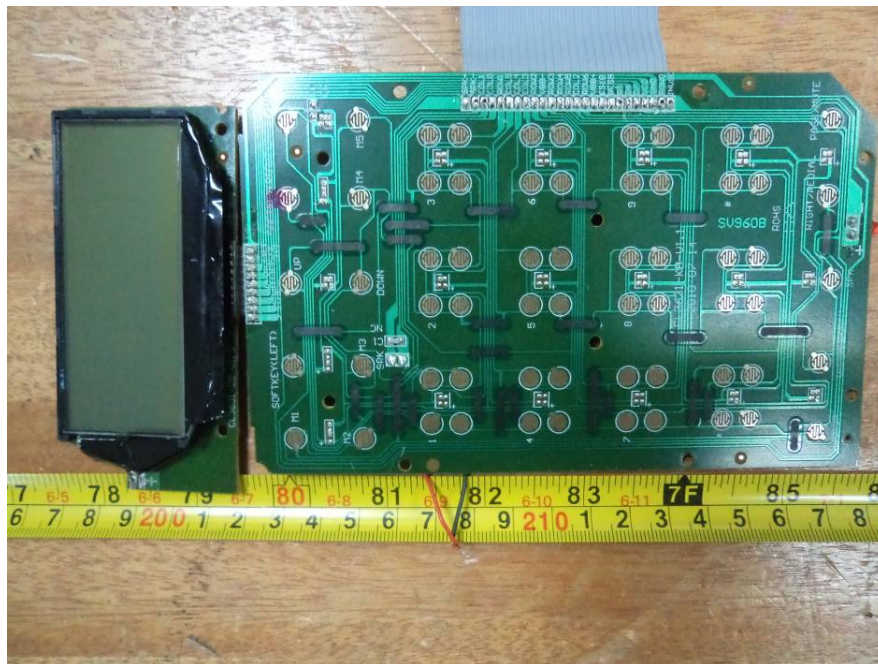
EUT – Main Board Top View



EUT – Main Board Bottom View



EUT – Key Board Top View



EUT – Key Board Bottom View



EUT – Adapter View



EUT – Adapter Label View



EXHIBIT B – TEST SETUP PHOTOGRAPHS

Base Talking with Telephone: Conducted Emissions - Front View (AC Mains)



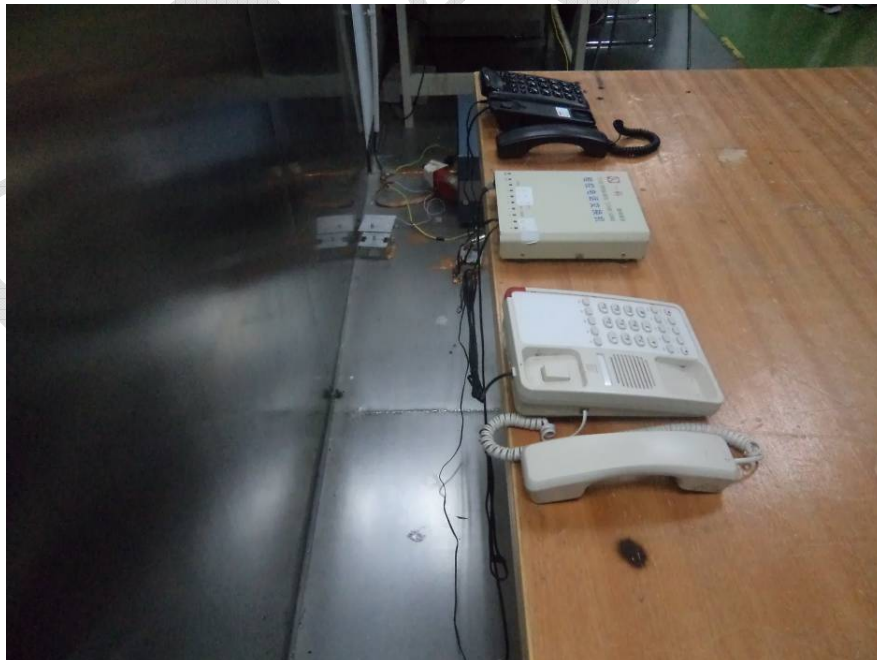
Base Talking with Telephone: Conducted Emissions - Side View (AC Mains)



Base Talking with Telephone: Conducted Emissions - Front View (RJ11)



Base Talking with Telephone: Conducted Emissions - Side View (RJ11)



Talking with Handset: Conducted Emissions - Front View (AC Mains)



Talking with Handset: Conducted Emissions - Side View (AC Mains)



Talking with Handset: Conducted Emissions - Front View (RJ11 Port)



Talking with Handset: Conducted Emissions - Side View (RJ11 Port)



Talking with Handset: Radiated Emissions - Front View



Talking with Handset: Radiated Emissions - Rear View



Base Talking with Telephone mode: Radiated Emissions - Front View



Base Talking with Telephone mode: Radiated Emissions - Rear View



******END OF REPORT******